CERENA
Centro de Recursos Naturais e Ambiente

NEWSLETTER

NOVEMBER 2025

Science in motion: highlights from our events, labs, and people

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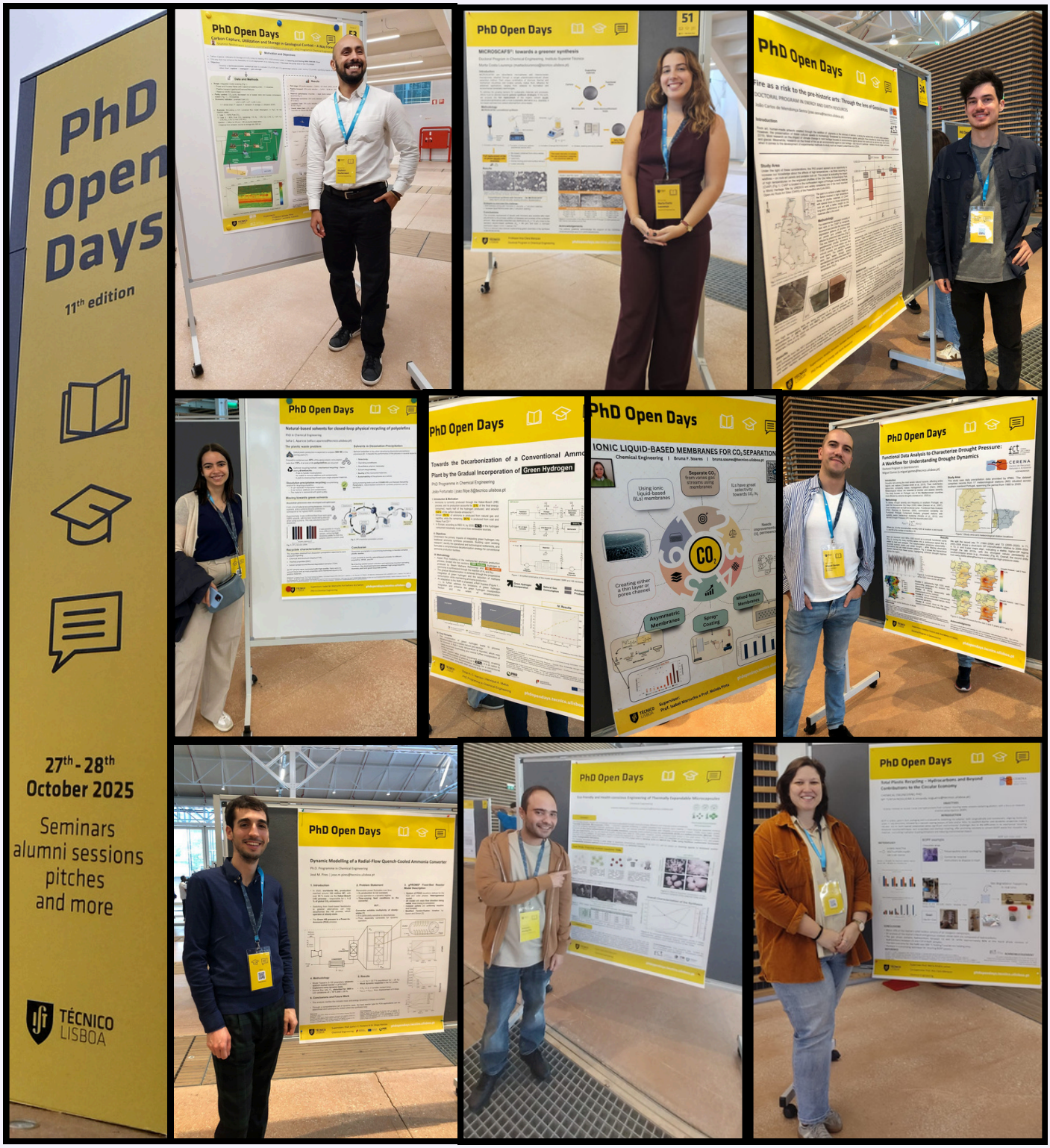
October Events Highlights

CERENA at the PhD Open Days 2025

On **October 27th and 28th, 2025**, the **Técnico Innovation Center** hosted the **11th edition of the PhD Open Days**, organized by the Técnico Doctoral School. This annual event brings together PhD students to share their research, exchange experiences, and strengthen connections with academia, industry, and alumni.
CERENA was proudly represented by several of its PhD students, who actively participated in **various sessions** throughout the event.



October Events Highlights

CERENA at the PhD Open Days 2025

In addition to the **Poster Session**, the event also featured a dynamic **Pitch Session**, where four CERENA PhD students (Ana Filipa Duarte, Shahmir Nosherwani, Sila Özkan Pires Pereira, and Sofia Orišková Moreira Fernandes) presented their research projects. This format enabled them to share the core ideas and objectives of their work in a concise and engaging way, contributing to the visibility of CERENA's ongoing doctoral research.

Congratulations to all PhD students! Their contributions reflect CERENA's commitment to advanced training and the promotion of high-quality research.

October Events Highlights

CERENA Seminar

On **October 30th , 2025**, CERENA hosted a seminar focused on the role of innovation in sustaining industrial activity, with a particular look at the acrylic fiber sector. The session reflected on the closure of Fisipe/SGL, the last acrylic fiber producer in Western Europe, and how research and development helped extend its operational life despite market decline.
The seminar featured Ana Clara Marques, Associate Professor at IST and CERENA researcher, who presented her current work on BioCFiber, a project focused on sustainable polymer development. Rui Dias, former R&D engineer at Fisipe, shared insights from his decades-long career in industrial fiber innovation, highlighting key projects that expanded the company's market reach.
The discussion underscored the enduring importance of R&D in industrial resilience and transformation.

October Events Highlights

The ValorWaste Biannual Meeting took place on October 22, 2025, via the Microsoft Teams platform

The **ValorWaste** ERA-MIN project, coordinated by Maria de Lurdes Dinis, researcher at CERENA-FEUP is supported by ten additional international partners.
The main objective of the ValorWaste project is to contribute to the sustainability of the raw materials industry by proposing an innovative supply chain approach for critical and strategic raw materials. This includes the valorisation of residues generated by the extractive industry and their integration into construction materials and chemicals, following the recovery of contained critical minerals.
The consortium is currently studying eleven types of mining waste from Portugal, Poland, and Turkey, applying different approaches tailored to each context.
The purpose of the meeting was to present project updates and discuss upcoming deliverables. Dissemination activities, including publications and conference posters, were also reviewed.
The next meeting will be the General Assembly, scheduled for April 21 and 22, 2026, and will be hosted by Hacettepe University in Ankara, Turkey.

October Events Highlights

MINOTAUR Consortium Meeting in Lisbon

From **October 22nd to 24th, 2025**, the **MINOTAUR** consortium met at Instituto Superior Técnico (IST) in Lisbon for another project meeting. This Horizon Europe-funded, brings together eight partners, **LTU, DTU, PWR, IST-ID** (coordinated by Leonardo Azevedo)**, UPAT, IMA EUROPE, CFI, and TERNAMAG,** working towards the development of miniaturized robotic systems for autonomous exploration of critical raw materials in deep subsurface environments.
The first two days were dedicated to intensive discussions and strategic planning, covering technical progress, integration challenges, and upcoming milestones. The meeting fostered a collaborative atmosphere, reinforcing the consortium's commitment to innovation and sustainability in mining technologies.
On **October 24th, 2025,** participants visited the **SOMINCOR mining** site in Alentejo, gaining valuable insights into operational realities and the potential applications of MINOTAUR's technologies in active mining environments.
The Lisbon meeting marked a significant step forward in aligning efforts across disciplines and institutions, paving the way for the next phase of development in this ambitious project.

News about CERENA´s community

CERENA members take part in the first meeting of the newly established Associação Portuguesa para a Gestão de Ciência (SCIGESTPT)

On **October 8th, 2025**, CERENA members took part in the first meeting of the newly established **Associação Portuguesa para a Gestão de Ciência (SCIGESTPT)**, held at the University of Aveiro. Represented by Mariana Santa-Marta and Joana Barrelas, CERENA joined an inspiring group of 218 participants — including research managers and institutional representatives — for a day of insightful dialogue and collaboration on the future of science management in Portugal.
During the conference, Mariana Santa-Marta, Head of CERENA's and CEGIST Pre-Award Office, shared her experience as an **RM Roadmap Ambassador** in the session Best practices in science management: case studies of international networks. Her contribution enriched the exchange of practices and perspectives within the research management community.
CERENA is proud to support and take part in this important initiative, which lays the groundwork for a vibrant and collaborative network of science management professionals in Portugal.

Maria de Lurdes Dinis Participates in IAEA Technical Meeting on Environmental Remediation Technologies

Participation of Maria de Lurdes Dinis on the **IAEA Technical Meeting on Gap Analysis of Environmental Technologies in Environmental Remediation**, IAEA Headquarters, Vienna, Austria and virtual participation via Microsoft Teams, 13 - 17 October 2025.
The purpose of the meeting was to review the technologies used in environmental remediation, analyse their performance and identify gaps that may require innovative technologies and approaches in order to address remediation targets, improve cost effectiveness and enhance stakeholder acceptance.

News about CERENA´s community

Professor João Gomes among the World's Top 2% Most Cited Scientists

Stanford University (California, USA) has recently released the latest update of the **World's Top 2% Scientists Network**, a global ranking that identifies the most cited researchers across all scientific disciplines, based on standardized citation metrics.
Among the more than 100,000 researchers listed, Professor João Gomes, coordinator of the CERENA Energy Group, stands out for his contributions in the fields of Energy, Environmental Sciences, and Enabling & Strategic Technologies, with affiliation to ISEL.
This international recognition highlights the scientific excellence and impact of Professor João Gomes' work, reinforcing the relevance of the research developed within CERENA and ISEL.

Greek Researchers Visit CERENA-IST and CERENA-FEUP to Strengthen International Collaboration

From October 20th and 23rd, 2025, **CERENA welcomed two researchers** and faculty members from the Technical University of Crete (TUC), Greece, as part of an International Mobility Programme. Stella Raka, a Mineral Resources Engineer, and Eleni Chamilaki, a Chemist, both from the School of Mineral Resources Engineering at TUC, **visited CERENA-IST and CERENA-FEUP.**
The visit aimed to foster the exchange of specialized knowledge and technical expertise in addressing critical challenges related to quality, safety, and health in the extraction and processing of mineral and energy resources.
During the visit to CERENA-IST, the researchers were welcomed and guided by Maria Orquídia Neves, who introduced them to the research activities and facilities at the Instituto Superior Técnico.
During the visit to FEUP, the visitors toured the Laboratory of Prospecting, Extraction and Processing of Georesources and Geoenvironment. They were introduced to ongoing research activities at CERENA-FEUP and to the educational initiatives in Mining and Geoenvironmental Engineering. The visit was coordinated by Professors Maria Cristina Vila and Maria de Lurdes Dinis.
This initiative reflects CERENA's commitment to international collaboration and knowledge sharing in the field of georesources and sustainable development.

News

MOFs Awarded Nobel Prize

The **2025 Nobel Prize in Chemistry** was awarded to S**usumu Kitagawa, Richard Robson, and Omar M. Yaghi** for their groundbreaking work on **Metal-Organic Frameworks (MOFs)** — a class of porous crystalline materials with extraordinary surface areas and modularity.
At CERENA, MOFs are at the heart of the **SIMIACCI** project (Sustainable Intelligent Management of Indoor Air Quality for the Culture and Creative Industries), coordinated by Moisés Pinto. This Horizon Europe-funded initiative aims to develop innovative air purification systems for museums, libraries, and archives, using MOFs to efficiently capture harmful pollutants such as VOCs, NOx, and H_2S, while significantly reducing energy consumption.

Important Information for CERENA Members – Acknowledging Institutional Support

All CERENA members are kindly reminded that any acknowledgements of institutional support in publications, presentations, papers, or other dissemination materials should follow the guidelines provided in the document:

Publicity Manual for CERENA Support

Please consult this manual to ensure proper and consistent referencing of CERENA in your scientific outputs.

Key Dates & Events – November Highlights

- **27th November** – CERENA Seminar, 12:30, IST (Central Building) – Room C13 / FEUP – Room F405.
  Title: Process Heat Integration in Industry
  Speakers: Henrique Matos (IST) / Mário Jorge Pinho (Former director of the Bondalti (ex-Cuf))

Pre-Award

Celebrating Success: Beatriz Barrocas and João Narciso

Beatriz Barrocas – CEEC Individual Success
We are proud to highlight Beatriz Barrocas, who has been awarded a CEEC Individual Contract, ranking 1st in her evaluation panel.

This distinction secures a three-year contract that will allow Beatriz to launch her independent research career and continue contributing to CERENA's excellence. Her achievement reflects both her dedication and the strong support culture within our research community.

Congratulations, Beatriz!

João Narciso – EAGER Project Selected under EIT Raw Materials
João Narciso achieved another important milestone with the selection of his project "dronE Applications for Geophysical ExploRation (EAGER)" under the KAVA Call 13 – RIS Capacity Building coordinated by the Gómez Pardo Foundation (Spain).

The project, with a total budget of €1,191,717 (CERENA share: €341,717), will explore drone-based applications for geophysical exploration, enhancing innovation capacity in raw materials research.

With EAGER, CERENA becomes a member of the EIT Raw Materials, one of Europe's largest innovation communities supported by the European Institute of Innovation and Technology (EIT). This membership strengthens CERENA's position within a strategic European network connecting academia, research, and industry to advance sustainable raw materials and circular economy solutions.

Congratulations, João, on this outstanding success and contribution to CERENA's international presence!

CERENA Submissions – October 2025

October continued the momentum of active participation in European programmes, with the submission of:

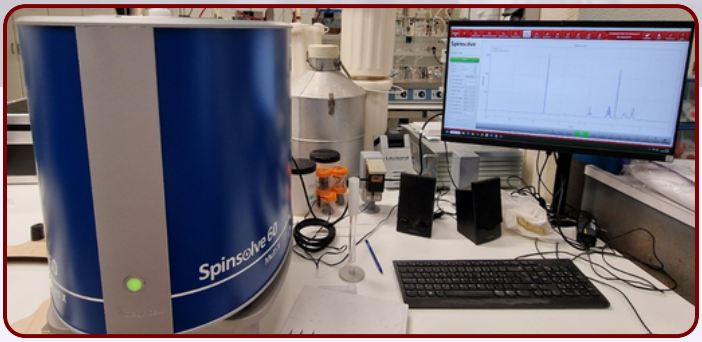
- 1 MSCA Staff Exchange (MSCA-SE) proposal
- 2 COST Action proposals (Management committee)

These initiatives demonstrate CERENA's ongoing commitment to international collaboration and capacity building within Horizon Europe and associated networks.

SharePoint: **Pre Award** – You can learn more about funding, get involved in networking events, and connect to other relevant stakeholders.

Inside Our Labs

A new benchtop NMR is now operational (SPINSOLVE 60MHZ MULTI-X MAGRITEK)



This **benchtop NMR** can be used for routine chemical analysis, quality control, and research. It allows fast **identification and quantification of compounds with minimal sample preparation**. In research, it helps monitor reactions, confirm product composition, and study molecular structures. Its main advantages are **compact size and easy operation** compared to high-field NMR systems. It does not require deuterated solvents, which simplifies sample handling.
It is possible to **analyze proton, carbon, fluorine, and phosphorus nuclei**. Reaction follow-up in closed loop is also possible.

A new microwave reactor (Anton Paar Monowave 400)

A **microwave reactor (Anton Paar Monowave 400)** with autosampler is now fully operational. The Monowave 400 is a microwave reactor designed for **high-pressure and high-temperature synthesis, reaching up to about 300 °C and 30 bar.** It offers accurate temperature control through an infrared sensor, ensuring reproducible results. Its strong stirring system and 850 W microwave power provide uniform heating and improve reaction efficiency. The reactor supports various vial sizes and materials, allowing flexibility for different samples and solvents. It includes automation with a **24-position autosampler** and a **built-in camera for real-time monitoring**, making it suitable for research and development in **chemical synthesis**.

Both equipment are located at **ChemLab** (South Tower - IST).

For equipment use, please contact Moisés Pinto (moises.pinto@tecnico.ulisboa.pt) and Rui Galhano (rui.galhano@tecnico.ulisboa.pt).

Our Publications

1. Machado, J.S.S., Souza, D.J.S.N., Dinis, M.L., Nicolau, A.S.N. (2025). Assessment of Radiological Plume Dispersion in LBLOCA-Type Accidents at Nuclear Power Plants, Atmosphere 2025, 16(9), 1089

2. Pinto, R.V., Pinto, M.L., Serre, C. (2025). Gasotransmitters in Modern Medicine: Promises and Challenges in the Use of Porous Crystalline Carriers. Advanced Healthcare Materials,14(26)

3. Lobarinhas, R., Dionísio, A., Paneiro, G. and 1 more (...) (2025). Evaluating Leeb hardness as a reliable UCS predictor for stone masonry exposed to high temperatures: The influence of porosity across diverse carbonate lithologies. Journal of Building Engineering,111

4. Welton, T., Cole-Hamilton, D.J., Kerton, F. and 7 more (...) (2025). Stockholm Declaration on Chemistry for the Future. RSC Sustainability,3(10) 4187-4189

5. Fan, W., Azevedo, L., Liu, G. and 3 more (...) (2025). Automatic reconstruction of 3D geological models based on recurrent neural network and predictive learning. Computers and Geosciences,204

6. Cruz, T.F.C., López-Sánchez, B., Lemos, M.A.N.D.A. and 2 more (...) (2025). Borane-functionalized heteroscorpionate copper complexes as catalysts for azide-alkyne cycloaddition. Dalton Transactions,54(36) 13472-13482

7. Borsoi, G., Parracha, J.L., Bersch, J.D. and 5 more (...) (2025). Long-Term Performance of Thermal Insulating Composite Systems Based on Water Resistance and Surface Multifunctionality. Energies,18(18)

8. Rosado, S., Ribeiro, J.T., Jeronimo, V.R. (2025). New Trends in Planning School Buildings Design: Outdoor Pedagogical Spaces Approach. Buildings,15(17)

9. Soares Dias, A.P., Martins, L., Ribeiro, R. and 2 more (...) (2025). Polyglycerol citrate bioadhesive for sawdust green composites. Cellulose,32(13) 7803-7816

10. Sanchez, A., Gaspar, J., & Lobo Antunes, J. (2025). Entre a prática e a investigação: reflexões dos comunicadores de ciência no projeto RETHINK SciComm em Portugal. Análise Social, 60(256), e35451.

New Members

CERENA is pleased to welcome new PhD students and one MSc student who have recently joined our team:

Amir Afzali

Amir Afzali is a Marie Skłodowska-Curie Actions **(MSCA) Doctoral Networks Fellow** under the CRITERIA project. His research focuses on geophysical data processing, subsurface imaging, and computational modeling using machine learning. He is currently supervised by João Narciso at Instituto Superior Técnico.

Fanxin Zeng

Fanxin Zeng is a **PhD student in Geological Resources and Geological Engineering** at the College of Earth Sciences and Engineering, Hohai University, China. From October 2025 to September 2026, he will be joining CERENA as a **visiting PhD student**. He is supervised by Leonardo Azevedo at Instituto Superior Técnico.

Chengjin Gu

He is a **visiting PhD student in Mining Engineering** at the China University of Mining and Technology-Beijing (CUMTB), currently undertaking a one-year research stay at CERENA.
His research focuses on the management of mining solid waste, the development of cemented paste backfills materials, and the utilisation of underground spaces. He is particularly interested in CO_2 sequestration and mineralisation in cementitious materials, as well as geothermal energy recovery from mined-out areas. He is supervised by Matilde Costa e Silva, at Instituto Superior Técnico.

David Valverde

He holds a bachelor's degree in Engineering Physics from Instituto Superior Técnico and is **currently pursuing a master's degree in Energy Resources Engineering** at the same institution. His main interests lie at the intersection of technology and engineering, with a particular focus on machine learning and artificial intelligence. He recently began a research fellowship within the MINOTAUR, under the supervision of Maria João Pereira, at Instituto Superior Técnico.

What´s Coming Next – December Preview

- **18th December** – CERENA Seminar, 12:30, IST (Central Building) – Room C13 / FEUP – Room F405
  Title: Applied Research, the golden triangle: research, funding and industrial partnership
  Speakers: Maria Teresa Carvalho (IST) / Susana Ângelo (Sociedade Ponto Verde) / TBC

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Thank you for reading. Stay tuned for more updates in our next Newsletter.

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